

GLOSSARY

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| Å | Angstrom |
| aberration | Property of an optical system that causes an image to have certain easily recognizable flaws. Aberrations are caused by geometrical factors such as the shapes of surfaces, their spacing, and alignments. Image problems caused by factors such as scratches or contamination are not called aberrations. |
| ACE | Actuator Control Electronics |
| ACS | Advanced Camera for Surveys |
| acquisition, target | Orienting the HST line of sight to place incoming target light in an instrument's aperture |
| actuator | Small, high-precision, motor-driven device that can adjust the location and orientation of an optical element in very fine steps, making fine improvements to the focus of the image |
| Advanced Computer | A 486-based computer that will replace the DF-224 on SM-3A. Performs onboard computations and handles data and command transmissions between HST systems and the ground system. |
| AFM | Adjustable Fold Mirror |
| aft | Rear of the spacecraft |
| alignment | Process of mounting optical elements and adjusting their positions and orientations so that light follows exactly the desired path through the instrument and each optical element performs its function as planned |
| altitude | Height in space |
| AMA | Actuator Mechanism Assembly |
| AME | Actuator Mechanism Electronics |
| aperture | Opening that allows light to fall onto an instrument's optics |
| aplanatic | Image corrected everywhere in the field of view |
| apodizer | Masking device that blocks stray light |
| arcsec | A wedge of angle, 1/3600th of one degree, in the 360-degree "pie" that makes up the sky. An arcminute is 60 seconds; a degree is 60 minutes. |

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| ASCS | Aft Shroud Cooling System |
| ASLR | Aft Shroud Latch Repair (kits) |
| ASIPE | Axial Scientific Instrument Protective Enclosure |
| astigmatism | Failure of an optical system, such as a lens or a mirror, to image a point as a single point |
| astrometry | Geometrical relations of the celestial bodies and their real and apparent motions |
| ATM | Auxiliary Transport Module |
| attitude | Orientation of the spacecraft's axes relative to Earth |
| AURA | Association of Universities for Research in Astronomy |
| axial science instruments | Four instruments – the STIS, NICMOS, FOC, and COSTAR – located behind the primary mirror. Their long dimensions run parallel to the optical axis of the HST. |

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| baffle | Material that extracts stray light from an incoming image |
| BAPS | Berthing and Positioning System |
| BPS | BAPS Support Post |

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| C | Celsius |
| Cassegrain | Popular design for large, two-mirror reflecting telescopes in which the primary mirror has a concave parabolic shape and the secondary mirror has a convex hyperbolic shape. A hole in the primary allows the image plane to be located behind the large mirror. |
| CAT | Crew Aids and Tools |
| CCC | Charge Current Controller |
| CCD | Charge-coupled device |
| CCS | Control Center System |
| CDI | Command data interface |

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| change-out | Exchanging a unit on the satellite |
| cm | Centimeter |
| collimate | To straighten or make parallel two light paths |
| coma | Lens aberration that gives an image a “tail” |
| concave | Mirror surface that bends outward to expand an image |
| convex | Mirror surface that bends inward to concentrate on an image |
| coronagraph | Device that allows viewing a light object’s corona |
| COS | Cosmic Origins Spectrograph |
| COSTAR | Corrective Optics Space Telescope Axial Replacement |
| CPM | Central Processor Module |
| CPU | Central Processing Unit |
| CTVC | Color television camera |
| CU/SDF | Control Unit/Science Data Formatter |
| CSS | Coarse Sun Sensor |
| -D- | |
| diffraction grating | Device that splits light into a spectrum of the component wavelengths |
| DIU | Data Interface Unit |
| DMS | Data Management Subsystem |
| DMU | Data Management Unit |
| drag, atmospheric | Effect of atmosphere that slows a spacecraft and forces its orbit to decay |
| -E- | |
| ECA | Electronic Control Assembly |
| ECU | Electronics Control Unit |
| electron | Small particle of electricity |
| ellipsoid | Surface whose intersection with every plane is an ellipse (or circle) |
| EPDSU | Enhanced Power Distribution and Switching Unit |

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| EPS | Electrical Power Subsystem |
| EP/TCE | Electrical Power/Thermal Control Electronics |
| ESA | European Space Agency |
| E/STR | engineering/science data recorders |
| EVA | extravehicular activity |
| extravehicular | Outside the spacecraft; activity in space conducted by suited astronauts |

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| F | Fahrenheit |
| FGE | Fine Guidance Electronics |
| FGS | Fine Guidance Sensor |
| FHST | Fixed Head Star Tracker |
| FOC | Faint Object Camera |
| focal plane | Axis or geometric plane where incoming light is focused by the telescope |
| FOSR | Flexible optical solar reflector |
| FOV | Field of view |
| FPS | Focal plane structure |
| FPSA | Focal plane structure assembly |
| FRB | Fastener retention block |
| FS | Forward Shell |
| FSIPE | FGS Scientific Instrument Protective Enclosure |
| FSS | Flight Support System |

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| GA | Gallium arsenide |
| G/E | Graphite-epoxy |
| GE | General Electric |

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| GGM | Gravity Gradient Mode |
| GSE | Ground support equipment |
| GSFC | Goddard Space Flight Center |
| GSSS | Guide Star Selection System |
| GSTDN | Ground Spaceflight Tracking and Data Network |

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| HGA | High Gain Antenna |
| HST | Hubble Space Telescope |
| hyperboloidal | Slightly deeper curve, mathematically, than a parabola; shape of the primary mirror |
| Hz | Hertz (cycles per second) |

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| IBM | International Business Machines Corporation |
| in. | Inches |
| interstellar | Between celestial objects; often refers to matter in space that is not a star, such as clouds of dust and gas |
| intravehicular | Inside the spacecraft |
| IOU | Input/output unit |
| IR | Infrared |
| IV | Intravehicular |
| IVA | Intravehicular activity |

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| JPL | Jet Propulsion Laboratory |
| JSC | Johnson Space Center |

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| k | Kilo (1000) |
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| kB | Kilobytes |
| kg | Kilogram |
| km | Kilometer |
| KSC | Kennedy Space Center |

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| Latch | Mechanical device that attaches one component, such as a science instrument, to the structure of the telescope and holds it in precisely the right place |
| lb | Pound |
| LGA | Low Gain Antenna |
| LGA PC | Low Gain Antenna Protective Cover |
| Light year | The distance traveled by light in one year, approximately six trillion miles |
| LMMS | Lockheed Martin Missiles & Space |
| LOPE | Large ORU Protective Enclosure |
| LOS | Line of sight |
| LS | Light Shield |
| luminosity | Intensity of a star's brightness |

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| m | Meter |
| μm | Micrometer; one millionth of a meter |
| mm | Millimeter |
| MA | Multiple access |
| magnitude, absolute | How bright a star appears without any correction made for its distance |
| magnitude, apparent | How bright a star would appear if it were viewed at a standard distance |
| MAMA | Multi-Anode Microchannel Plate Array |
| MAT | Multiple Access Transponder |

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| MCC | Mission Control Center |
| MCP | Microchannel plate |
| metrology | Process of making extremely precise measurements of the relative positions and orientations of the different optical and mechanical components |
| MFR | Manipulator Foot Restraint |
| MHz | Megahertz |
| MLI | Multi-layer insulation |
| Mpc | Megaparsec (one million parsecs) |
| MOPE | Multimission ORU Protective Enclosure |
| MSFC | Marshall Space Flight Center |
| MSM | Mode Selection Mechanism |
| MSS | Magnetic Sensing System |
| MT | Magnetic torquer |
| MTA | Metering Truss Assembly |
| MTS | Metering Truss Structure |
| M | Absolute visual magnitude |
| m | Apparent visual magnitude |

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| NASA | National Aeronautics and Space Administration |
| NBL | Neutral Buoyancy Laboratory at JSC |
| NASCOM | NASA Communications Network |
| NCC | Network Control Center |
| NCS | NICMOS Cooling System |
| nebula | Mass of luminous interstellar dust and gas, often produced after a stellar nova |
| NICMOS | Near Infrared Camera and Multi-Object Spectrometer |

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| nm | Nanometers |
| nmi | Nautical miles |
| NOBL | New Outer Blanket Layer |
| nova | Star that suddenly becomes explosively bright |
| NPE | NOBL Protective Enclosure |
| NSSC-I | NASA Standard Spacecraft Computer, Model-I |

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| occultation | Eclipsing one body with another |
| OCE | Optical Control Electronics |
| OCE-EK | OCE Enhancement Kit |
| OCS | Optical Control Subsystem |
| Orientation | Position in space relative to Earth |
| ORU | Orbital Replacement Unit |
| ORUC | Orbital Replacement Unit Carrier |
| OSS | Office of Space Science, NASA Headquarters |
| OTA | Optical Telescope Assembly |

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| PACOR | Packet Processing Facility |
| parallax | Change in the apparent relative orientations of objects when viewed from different positions |
| parsec | A distance equal to 3.26 light years |
| PCEA | Pointing Control Electronics Assembly |
| PCS | Pointing Control Subsystem |
| PCU | Power Control Unit |
| PDA | Photon Detector Assembly |
| PDM | Primary Deployment Mechanism |

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| PDU | Power Distribution Unit |
| PFR | Portable Foot Restraint |
| photon | Unit of electromagnetic energy |
| PIP | Push in-pull out (pin) |
| pixel | Single picture element of a detection device |
| POCC | Payload Operations Control Center |
| polarity | Light magnetized to move along certain planes. Polarimetric observation studies the light moving along a given plane. |
| primary mirror | Large mirror in a reflecting telescope the size of which determines the light-gathering power of the instrument |
| prism | Device that breaks light into its composite wavelength spectrum |
| PSEA | Pointing/Safemode Electronics Assembly |
| PSO | HST Project Science Office at GSFC |

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| quasar | Quasi-stellar object of unknown origin or composition |
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| RAM | Random-access memory |
| radial | Perpendicular to a plane (i.e., instruments placed at a 90-degree angle from the optical axis of the HST) |
| RBM | Radial Bay Module |
| RDA | Rotary Drive Actuator |
| reboost | To boost a satellite back into its original orbit after the orbit has decayed because of atmospheric drag |
| reflecting telescope | Telescope that uses mirrors to collect and focus incoming light |
| refracting telescope | Telescope that uses lenses to collect and focus light |
| resolution | Ability to discriminate fine detail in data. In an image, resolution refers to the ability to distinguish two objects very close together in space. In a spectrum, it is the ability to measure closely separated wavelengths. |

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| resolution, spectral | Determines how well closely spaced features in the wavelength spectrum can be detected |
| resolution, angular | Determines how clearly an instrument forms an image |
| RF | Radio frequency |
| RGA | Rate Gyro Assembly |
| Ritchey-Chretien | A modern optical design for two-mirror reflecting telescopes. It is a derivative of the Cassegrain concept in which the primary mirror has a hyperbolic cross-section. |
| RIU | Remote Interface Unit |
| RMGA | Retrieval Mode Gyro Assembly |
| RMS | Remote Manipulator System |
| ROM | Read-only memory |
| RS | Reed-Solomon |
| RSU | Rate Sensor Unit |
| RWA | Reaction Wheel Assembly |

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| SA | Solar Array |
| SAA | South Atlantic Anomaly |
| SAC | Second Axial Carrier |
| SAD | Solar Array Drive |
| SADE | Solar Array Drive Electronics |
| SADM | Solar Array Drive Mechanism |
| SAGA | Solar Array Gain Augmentation |
| SBA | Secondary Baffle Assembly |
| SBC | Single-Board Computer |
| SCP | Stored Command Processor |
| SDAS | Science Data Analysis Software |

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| SDM | Secondary Deployment Mechanism |
| secondary mirror | In a two-mirror reflecting telescope, the secondary mirror sits in front of the larger primary mirror and reflects light to the point at which it will be detected and recorded by an instrument. In simple telescopes, the secondary mirror is flat and bounces the light out the side of the tube to an eyepiece. In more complex and larger telescopes, it is convex and reflects light through a hole in the primary mirror. |
| Servicing Mission | NASA's plan to have the Space Shuttle retrieve the HST and have astronauts perform repairs and upgrades to equipment in space |
| SI | Science Instrument |
| SI C&DH | SI Control and Data Handling (subsystem) |
| SIPE | Science Instrument Protective Enclosure |
| SM | Secondary Mirror |
| SMA | Secondary Mirror Assembly |
| SM1 | First HST Servicing Mission, December 1993 |
| SM2 | Second HST Servicing Mission, February 1997 |
| SM3A | HST Servicing Mission 3A, October 1999 |
| SM3B | HST Servicing Mission 3B, planned for December 2000 |
| SOFA | Selectable Optical Filter Assembly |
| SOGS | Science Operations Ground System |
| SOPE | Small ORU Protective Enclosure |
| spectral devices | These include spectrographs, instruments that photograph the spectrum of light within a wavelength range; spectrometers, which measure the position of spectral lines; and spectrophotometers, which determine energy distribution in a spectrum. |
| spectrograph | Instrument that breaks light up into its constituent wavelengths and allows quantitative measurements of intensity to be made |
| spectrum | Wavelength range of light in an image |

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| spherical aberration | Image defect caused by a mismatch in the shapes of the reflecting surfaces of the primary and secondary mirrors. Light from different annular regions on the primary mirror comes to a focus at different distances from the secondary mirror, and there is no one position where all of the light is in focus. |
| SSAT | S-band Single-Access Transmitter |
| SSC | Science Support Center |
| SSE | Space Support Equipment |
| SSM | Support Systems Module |
| SSM-ES | SSM Equipment Section |
| SSR | Solid State Recorder |
| SSRF | Shell/Shield Repair Fabric |
| STDN | Space (flight) Tracking and Data Network |
| STINT | Standard interface |
| STIS | Space Telescope Imaging Spectrograph |
| STOCC | Space Telescope Operations Control Center |
| STS | Space Transportation System |
| STScI | Space Telescope Science Institute |

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| TA | Translation Aids |
| TAG | Two-axis gimbal |
| TCE | Thermal Control Electronics |
| TCS | Thermal Control Subsystem |
| TDRS | Tracking and Data Relay Satellite |
| TDRSS | TDRS System |
| TECI | Thermoelectric-cooled inner (shield) |
| TECO | Thermoelectric-cooled outer (shield) |

telemetry Data and commands sent from the spacecraft to ground stations

TLM Telemetry

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UDM Umbilical disconnect mechanism

ULE Ultralow expansion

USA United States Army

USAF United States Air Force

USN United States Navy

UV ultraviolet

-V-

V Volt

V1, V2, V3 HST axes

VCS Vapor-cooled shield

VIK Voltage/Temperature Improvement Kit

-W-

W Watt

Wavelength Spectral range of light in an image

WFC Wide Field Camera

WFPC Wide Field and Planetary Camera. The camera currently in use is the second-generation instrument WFPC2, installed during the First Servicing Mission in December 1993. It replaced WFPC1 and was built with optics to correct for the spherical aberration of the primary mirror.